Define UG cable

- UG cable is group of individually insulated one or more conductors which is put together and finally provided with number of layers of insulation to give proper mechanical support.

Must read this PDF Cables.pdf

> The below point is from the pdf above

High Voltage Cables

- The presence of the sheath introduces certain difficulties as currents are induced in the sheath as well. This is due to fact that the sheaths of the conductors cross the magnetic fields set up by the conductor currents. At all points along the cable, the magnetic field is not the same, Hence different voltages are induced at different points on the sheath. This causes eddy currents to flow in the sheaths. These eddy currents depend mainly on

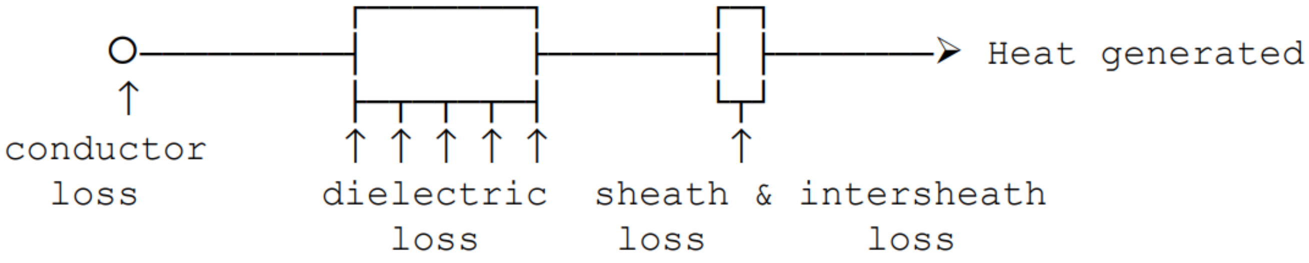
(a) the frequency of operation,

(b) the distance between cables,

(c) the mean radius of the sheath, and

(d) the resistivity of the sheath material.

Power loss in cable



Copper loss

They may be caused by the conductor current passing through the resistance of the conductor - **conductor loss** (also sometimes called the **copper loss** on account of the fact that conductors were mainly made out of copper).

Dielectric loss

What is dielectric loss Dielectric losses caused by the voltage across the insulation, The dielectric loss is voltage dependent.

Sheath losses

- Sheath losses caused by the induced currents in the sheath, and
- **Intersheath losses** caused by circulating currents in loops formed between sheaths of different phases. While the rest is current dependent.

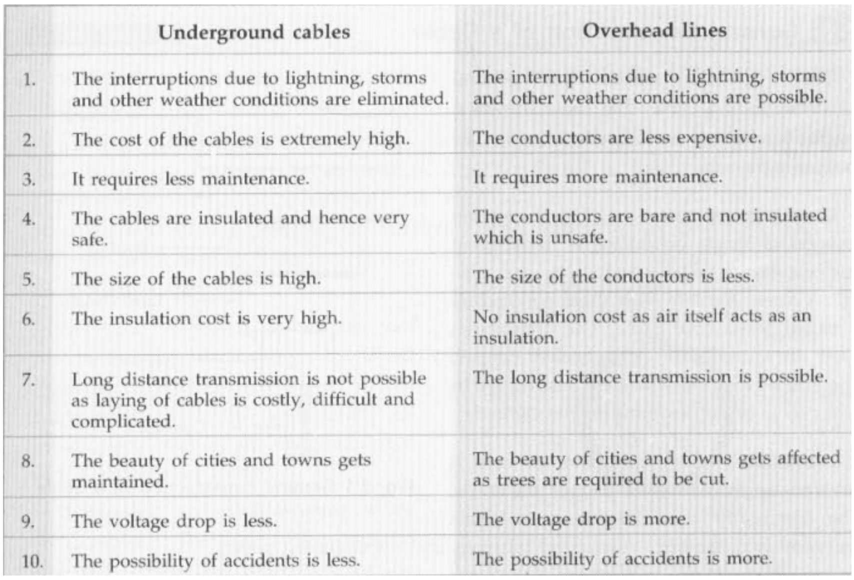
Why cables have considerable capacitance than OH lines?

Cables have higher capacitance why

- Cables have a much lower inductance than overhead lines due to the lower spacing between conductor and earth, but have a correspondingly higher capacitance, and hence a much higher charging current.

Need for UG

- Use of UG is almost compulsory at location like dense urban areas, Crossing of wide roads, Near gas plants and refineries, Near SS etc.



	Underground cables	Overhead lines
1.	The interruptions due to lightning, storms and other weather conditions are eliminated.	The interruptions due to lightning, storms and other weather conditions are possible.
2.	The cost of the cables is extremely high.	The conductors are less expensive.
3.	It requires less maintenance.	It requires more maintenance.
4.	The cables are insulated and hence very safe.	The conductors are bare and not insulated which is unsafe.
5.	The size of the cables is high.	The size of the conductors is less.
6.	The insulation cost is very high.	No insulation cost as air itself acts as an insulation.
7.	Long distance transmission is not possible as laying of cables is costly, difficult and complicated.	The long distance transmission is possible.
8.	The beauty of cities and towns gets maintained.	The beauty of cities and towns gets affected as trees are required to be cut.
9.	The voltage drop is less.	The voltage drop is more.
10.	The possibility of accidents is less.	The possibility of accidents is more.

Requirements for UG cable.